## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An integrated optical device comprising:

an optical substrate defining a non-guiding propagation region for an incident light signal propagating within a first plane and in a primary direction of propagation under total internal reflection at a surface of the substrate; and

a diffractive optical element having a plurality of spaced-apart members formed of an optically transparent material and ~~disposed~~ externally mounted to ~~above~~ the surface of the substrate such that the incident light signal incident on the surface under total internal reflection is reflected into the non-guiding propagation region ~~along a~~ for propagation within a second plane forming an acute angle with the first plane ~~desired direction of propagation different than the primary direction of propagation~~, wherein the first plane and the second plane extend orthogonally to the surface.

2. (Original) The integrated optical device of claim 1, wherein the substrate is formed of quartz.

3. (Original) The integrated optical device of claim 1, wherein the substrate is formed of sapphire.

4. (Original) The integrated optical device of claim 1, wherein the members are a plurality of strips that are substantially parallel.

5. (Original) The integrated optical device of claim 4, wherein the plurality of strips each have a substantially identical strip width.

6. (Original) The integrated optical device of claim 4, wherein the plurality of strips are each spaced apart a substantially equal spacing distance.

7. (Original) The integrated optical device of claim 4, wherein the plurality of strips each have a substantially identical strip width, the plurality of strips are each spaced apart a substantially equal spacing distance, and the spacing distance is substantially identical to the strip width.

8. (Original) The integrated optical device of claim 7, wherein the sum of the distance and width is between .58 and 48, where 8 is the wavelength of the light signal in the substrate.

9. (Currently Amended) The integrated optical device of claim 1, wherein the thickness of the members is ~~adjusted~~ set to maximize the intensity of the reflected light signal.

10. (Original) The integrated optical device of claim 1, wherein the members are formed of a material selected from the grouping consisting of amorphous silicon, crystalline silicon, and poly-silicon.

11. (Original) The integrated optical device of claim 1, wherein the members are formed of a material selected from the grouping consisting of alumina, sapphire, silicon nitride, and an alloy of poly-silicon and poly-germanium.

12. (Previously amended) The integrated optical device of claim 1, wherein the incident light signal propagates as a first unguided wave within the substrate, wherein the diffractive optical element is disposed to reflect the incident light signal as a second unguided wave within the substrate, and wherein the members are disposed in direct contact with the surface of the substrate.

13. (Cancelled without prejudice)

14. (Currently Amended) The integrated optical device of claim 1, wherein the diffractive optical element produces a first order diffracted mode that travels within the substrate in the second plane ~~in the desired direction of propagation at an angle to the primary direction of propagation~~.

15. (Original) The integrated optical device of claim 14, wherein the first order diffracted mode travels within the substrate under total internal reflection.

16. – 17. (Withdrawn without prejudice)

18. (Currently amended) The integrated optical device of claim 1, wherein the light ~~beam~~ signal is coupled into the substrate through a GRIN lens.

19. (Original) The integrated optical device of claim 1, wherein the members are substantially parallel linear elements.

20. (Previously presented) The integrated optical device of claim 1, wherein the members are formed on the surface of the substrate by depositing a silicon material in a patterned form.

21. (Original) The integrated optical device of claim 1, wherein the members and the substrate are formed of the same material.

22. (Original) The integrated optical device of claim 21, wherein the material is sapphire.

23. (Original) The integrated optical device of claim 1, where the members have a higher index of refraction than that of the substrate.

24. (Original) The integrated optical device of claim 1, where the diffractive optical element operates by means of total internal reflection.

25. (Currently Amended) The integrated optical device of claim 1, comprising a plurality of incident light signals propagating within the substrate and within the first plane each having a different wavelength and wherein the diffractive optical element reflects each of the plurality of incident light signals into a different first order diffracted mode as a reflected light signal that travels within the substrate ~~in~~ into one of a plurality of reflection planes ~~second directions of propagation~~ each forming ~~at~~ an acute angle with the first plane and each reflection plane perpendicular to the surface, ~~to the primary direction of propagation,~~ each reflected light signal traveling within the substrate under total internal reflection.

26. (Original) The integrated optical device of claim 1, wherein the members each have a width selected to maximize the intensity of the reflected light signal.

27. (Original) The integrated optical device of claim 1, wherein the members are formed of a plurality of strips, each strip having a width and an associated spacing, wherein the widths and the spacings vary among the strips.

28. (Original) The integrated optical device of claim 27, wherein the widths and the spacings vary in a continuous manner.

29. (Previously presented) A diffraction grating for use with an optically transparent substrate, the diffraction grating comprising:

a plurality of members formed of an optically transparent material and disposed above a ~~top~~ surface of the substrate, the members being spaced apart a spacing distance and having member widths, whereby the sum, a, of the spacing distance and the member width is chosen such that a light signal traveling within the substrate under total internal reflection off the ~~top~~ surface in an incident direction of propagation and incident upon the diffraction grating is reflected into a first diffracted order propagating within the substrate in a reflected direction of propagation defining an angle, $2_p$, with respect to the incident direction of propagation and propagating within the substrate under total internal reflection, wherein the light signal is incident upon the diffraction grating at an angle, 2, above a critical angle, 2 being measured from a normal to the ~~top~~ surface of the substrate extending into the substrate, and wherein the sum a is chosen such that $2_p$ is greater than 90° and less than 180°.

30. (Original) The diffraction grating of claim 29, wherein the sum, a, is between .58 and 48, where 8 is the wavelength of the light signal within the substrate.

31. (Original) The diffraction grating of claim 30, wherein 8 is between .25 :m microns and 10 :m microns.

32. (Cancelled without prejudice)

33. (Original) The diffraction grating of claim 29, wherein the spacing distance is substantially identical to the member width.

34. (Original) The diffraction grating of claim 29, wherein the members are formed of a material selected from the grouping consisting of amorphous silicon, crystalline silicon, and poly-silicon and wherein the substrate is formed of sapphire.

35. (Original) The diffraction grating of claim 29, wherein the members have an index of refraction higher than the index of refraction of the substrate.

36. – 46. (Withdrawn without prejudice.)

47. (Previously presented) An integrated optical device comprising:

an optical substrate disposed to propagate an incident light signal, in a primary direction of propagation, under total internal reflection at a surface of the substrate; and

a diffractive optical element having a plurality of spaced-apart members formed of an optically transparent material and disposed above the ~~top~~ surface of the substrate such that the incident light signal incident on the surface under total internal reflection is reflected within the substrate along a desired direction of propagation different than the primary direction of propagation, wherein the plurality of spaced-apart members are disposed in evanescent field coupling contact with the surface of the substrate.